

Insecticides From Sugar?

Sugar esters tested by ARS and university entomologists around the country could find use as environmentally friendly insecticides. The esters are lethal—almost immediately—to nearly all the mites and soft-bodied insects such as whiteflies, aphids, thrips, and pear psylla that they contact. Then they degrade into harmless sugars and fatty acids. These sugar esters do little harm to beneficial predatory insects and are nontoxic to animals and humans. Some are even approved as food-grade safe. And because of how the esters work, insect pests are not expected to develop resistance to them anytime soon.

This is a control concept that originated about a decade ago. Now 4 years of testing have shown the sugar esters to be as good as—or better than—conventional insecticides against mites and aphids on apples; psylla on pears; whiteflies, thrips, and mites on vegetables; and whiteflies on cotton. Like insecticidal soaps, the esters kill insects by either dissolving their protective waxy coatings or suffocating them. ARS and AVA Chemical Ventures of Portsmouth, New Hampshire, have applied for a patent. The company hopes to market the first of these sugar ester compounds by the end of 2000, pending U.S. Environmental Protection Agency registration. *Gary J. Puterka, USDA-ARS Appalachian Fruit Research Station, Kearneysville, West Virginia; phone (304) 725-3451, ext. 361, e-mail gputerka@afrs.ars.usda.gov.*

Managing Blackberry Rosette in the Southeast

New strategies for controlling rosette disease in blackberries could open a new market for small farmers. Rosette—or double blossom—one of the most severe fungal diseases of blackberries grown in the southeastern United States, is caused by the fungus *Cercospora rubi*. Many crops fall prey to this disease, which reduces yields and the quality of fruit.

Information used by growers to control rosette originated in the 1930s and has become outdated with the development of new cultivars and changes in the disease itself. Rosette is one of the major reasons southeastern farmers don't grow this specialty crop, which can yield \$3,000 to \$4,000 an acre.

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A promising new spray schedule for controlling blackberry rosette may inspire more farmers to grow blackberries.

Few fungicides are registered for controlling the disease, and benomyl is the most effective one yet tested. Researchers are evaluating some new fungicides and are also looking more closely at the pathogen and its mode of infection.

A modified fungicide spray schedule has already been found effective. It requires making four applications of the fungicide at 10- to 14-day intervals, beginning about 6 weeks before the berries ripen and continuing until 3 days before harvest; a fifth application immediately after harvest is also recommended. *Barbara J. Smith, USDA-ARS Small Fruit Research Station, Poplarville, Mississippi; phone (601) 795-8751, e-mail bjsmith@ag.gov.*

Natural Product Helps Insects "Bite the Dust"

Remnants of one of the oldest things on earth—diatomaceous earth (DE)—may help solve one of today's most pressing problems: developing noninsecticidal controls for insects in homes and food-processing facilities. Consisting of the dust of fossilized skeletons of microscopic aquatic plants, DE is nontoxic to humans. But it kills red flour beetles and confused flour beetles—two of the food-processing industry's worst insect pests. It works by disrupting the insects' outer covering, or exoskeleton, causing them to die from rapid water loss.

Researchers have found that fluctuations in temperature and relative humidity can affect the performance of DE products, which proved most effective in controlling adult insects at higher temperatures and lower humidities. In tests, a 2-day exposure to DE at 80 °F and 57-percent relative humidity killed all red flour beetles, while it took a 3-day exposure to kill all confused flour beetles. DE is a possible alternative to methyl bromide, an ozone-depleting fumigant scheduled for phaseout by 2005. *Frank H. Arthur, USDA-ARS Grain Marketing and Production Research Center, Manhattan, Kansas; phone (785) 776-2783, e-mail arthur@usgmrl.ksu.edu.*

Thistle CD-ROM Database Available

More than 450 research articles on the biology, taxonomy, and control of thistles are mentioned in *Thistles: Biology and Control* (ARS-150). This CD-ROM is a full-text database with a picture section and glossary. The database will be of use to anyone concerned with the study or control of thistles.

While supplies last, single copies of the CD-ROM may be ordered at no cost via mail or e-mail from Paul E. Boldt, USDA-ARS, 808 Blackland Rd., Temple, TX; e-mail boldt@brc.tamus.edu.